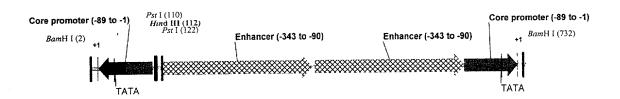
Fig. 1



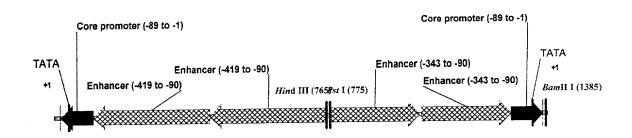
BDPC with 2 enhancers based on CaMV 35S promoter 736 bp

100.0



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Fig. 3



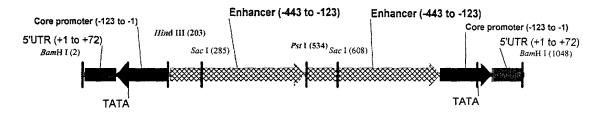
BDPC with 4 enhancers based on CaMV 35S promoter

1389 bp

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	81	GTCATCCCTT CAGTAGGGAA	ACGTCAGTGG TGCAGTCACC	AGATATCACA TCTATAGTGT	TCAATCCACT AGTTAGGTGA	TGCTTTGAAG ACGAAACTTC	ACGTGGTTGG TGCACCAACC	AACGTCTTCT TTGCAGAAGA	TTTTCCACGA AAAAGGTGCT
	161	TGCTCCTCGT ACGAGGAGCA	GGGTGGGGGT CCCACCCCCA	CCATCTTTGG GGTAGAAACC	GAČCACTGTC CTGGTGACAG	GGCAGAGGCA CCGTCTCCGT	TCTTCAACGA AGAAGTTGCT	TGGCCTTTCC ACCGGAAAGG	TTTATCGCAA AAATAGCGTT
·	241	TGATGGCATT ACTACCGTAA	TGTAGGAGCC ACATCCTCGG	ACCTTCCTTT TGGAAGGAAA	TCCACTATCT AGGTGATAGA	TCACAATAAA AGTGTTATTT	GTGACAGATA CACTGTCTAT	GCTGGGCAAT CGACCCGTTA	GGAATCCGAG CCTTAGGCTC
2 %	321	CTCCAAAGGC	GATATTACCC CTATAATGGG	AAACAACTTT	AGTCTCAATT TCAGAGTTAA	GCCCTTTGGT CGGGAAACCA	CTTCTGAGAC GAAGACTCTG	TGTATCTTTG ACATAGAAAC	ATATTTTTGG TATAAAAACC
	401		TGTGTCGTGC ACACAGCACG	TOCACOATCT	TGATTCACAT ACTAAGTGTA	CAATCCACTT GTTAGGTGAA	GCTTTGAAGA CGAAACTTCT	CGTGGTTGGA GCACCAACCT	ACGTCTTCTT TGCAGAAGAA
maga ipens nij	481	TTTCCACGAT AAAGGTGCTA	GCTCCTCGTG CGAGGAGCAC	CCACCCCCAG	CATCTTTGGG GTAGAAACCC	ACCACTGTCG TGGTGACAGC	GCAGAGGCAT CGTCTCCGTA	CTTCAACGAT GAAGTTGCTA	GGCCTTTCCT CCGGAAAGGA
Territoria (196	561	TTATCGCAAT AATAGCGTTA	GATGGCATTT CTACCGTAAA	CTACCACCCA	CCAACCAAAA	CCACTATCTT GGTGATAGAA	CACAATAAAG GTGTTATTTC	TGACAGATAG ACTGTCTATC	CTGGGCAATG GACCCGTTAC
	641	GAATCCGAGG	AGGTTTCCGG	ATATTACCCT	TTGTTGAAAA	GTCTCAATTG CAGAGTTAAC	CCCTTTGGTC GGGAAACCAG	TTCTGAGACT AAGACTCTGA	GTATCTTTGA CATAGAAACT
		CTTAGGCTCC	. TCCAAAGGCC	IAIAAICCON					
		CTTAGGCTCC	, TCCAAAGGCC	TRIMITOGON		HindIII			
	721		A GTAGACAAGT CATCTGTTCA	CMCMCCTCCT	CCACCATGTT	HindIII	PstI ~~~~~	CTTTTCAACA	AAGGGTAATA
		TATTTTTGGF ATAAAAACCT		GTGTCGTGCT CACAGCACGA	CCACCATGTT GGTGGTACAA	HindIII GATAAGCTTC	PstI TGCAGTGAGA ACGTCACTCT	CTTTTCAACA GAAAAGTTGT	AAGGGTAATA TTCCCATTAT
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	801 881 961 1041	TATTTTTGGA ATAAAAACCT TCGGGAAACCA AGCCCTTTGC CAAATGCCAC GTTTACGGTA CCACGAGGAA GGTGCTCCTC TTTCAACAA AAAGTTGTT	GTAGACAAGT CATCTGTTCA CTCCTCGGATT AGGAGCCTAA CGTAACGCTAT GCATCGTGGAA CGTAGCACCTT AGGGTAATATC	GTGTCGTGCT CACAGCACGA CCATTGCCCA GGTAACGGGT AAGGAAAGGC TTCCTTTCCG AAAGAAGACCC CCCTTTGGAC AATGCCATC	CCACCATGTT GGTGGTACAA GCTATCTGTC CGATAGACAG TATCGTTCAA ATAGCAAGTT CTCCAACCAC AAGGTTGGTC GAGCCTAAGC	HindIII  GATAAGCTTC CTATTCGAAG  ACTTCATCAA  TGAAGTAGTT  CTACGGAGAC  CTACGGAGAC  CATGCCCAGC  ATTGCCCAGC  TAACGGGTCC  A GGAAAGGCTT  A GGAAAGGCTT  CCTTTCCGA	PstI TGCAGTGAGA ACGTCACTCT AAGGACAGTA CCGACAGTGG GGCTGTCACC GCAAGTGGATA CTATCACCTA CTATCTGTCAC ATAGACAGTC	CTTTTCAACA GAAAAGGAAG CTTTTCCTTC TCCCAAAGAA AGGGTTTCTA CTACACTAAC TTCATCAAAA AAGTAGTTT A TGCCTCTGC T ACGGAGACG	AAGGGTAATA TTCCCATTAT  GTGGCACCTA CACCGTGGAT  GGACCCCCAC ACTGGGGTG  GCAGTGAGACT CGTCACTCTGA  AGGACAGTAGA TCCTGTCATCT CGACAGTGGTC CGACAGTGGTC CGACAGTGGTC
	801 881 961 1041	TATTTTTGGA ATAAAAACCT  TCGGGAAACC AGCCCTTTGC CAAATGCCAA GTTTACGGTA  CCACGAGGAA GGTGCTCCT  TTTCAACAA AAAGTTGTT  AAAGGAAGG TTTCCTTCC  CCAAAGATG	GTAGACAAGT CATCTGTTCA CTCCTCGGATT AGGAGCCTAA CTATCGCGATA GTAACGCTAT AGGATAACGCTAT CCCATTATAG TCCCATTATAG TGGCACCTACA CGGCACCTACA	GTGTCGTGCT CACAGCACGA CCATTGCCCA GGTAACGGGT AAGGAAAGGC TTCCTTTCCG AAAGAAACCTC CCCTTTGGAC AATGCCATCC TTACGGTAGC ACGAGGAGCC	CCACCATGTT GGTGGTACAA GCTATCTGTC CGATAGACAG TATCGTTCAA TTCCAACCAC AAGGTTGGTC GAGCCTAAGC ATGCGATACAC ATGCGATACAC ATGCGATACAC ATGCGATACACACACACACACACACACACACACACACACA	HindIII  GATAAGCTTC CTATTCGAAG  ACTTCATCAA  GATGCCTCTG CTACGGAGAC  CAGAAGTTC ATTGCCCAGG TAACGGGTCC A GGAAAGGCTT CCTTTCCGA	PstI TGCAGTGAGA ACGTCACTCT AAGGACAGTA TTCCTGTCAT GCGACAGTGGC GGTTCACCTA TATCTGTCAC ATAGACAGTC ATAGACAGTC TATCTGTCAC ATAGACAGTC TATCTGTCAC ATAGACAGTC AGCAACCACGAAGTTGCTCACCTACACCAACCACGAAGTTGCTCACCAACCA	CTTTTCAACA GAAAAGGAAG CTTTTCCTTC CTCCAAAGAT AGGGTTTCTA CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTACC CTACACTACC CTACACTACC CTACACTACC CTACACTACC CTACACTACC CTACACACTACC CTACACACTACACTACC CTACACACTACC CTACACACTACC CTACACACTACC CTACACACTACC CTACACACTACC CTACACACTACACTACC CTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACAC	AAGGGTAATA TTCCCATTAT GTGGCACCTA CACCGTGGAT CACCGTGGAT CAGTGAGACT GTCACTCTGA CCTGTCATCT CGACAGTGGTC CGACAGTGGTC CGACAGTGGTC CTGTCACCAG A AGTGGATTGA T TCACCTAACT
	801 881 961 1041 1121 1201	TATTTTTGGA ATAAAAACCT TCGGGAAACC AGCCCTTTGC CAAATGCCA: GTTTACGGTA CCACGAGGA GGTGCTCCTC TTTCAACAA AAAGTTGTT AAAGGAAGG TTTCCTTCC CCAAAGATG GGTTTCTAC	GTAGACAAGT CATCTGTTCA CTCCTCGGATT AGGAGCCTAA CATTGCGATA GTAACGCTAT GCATCGTGGAA CGTAGCACCTT AGGCACCTACA CCCATTATAG CGCACCTACA CCGTGGATGT CCCATTATAG CGCACCTACACACCTCCCCCCCCCC	GTGTCGTGCT CACAGCACGA  CCATTGCCCA GGTAACGGGT  AAGGAAAGGC TTCCTTTCCG  AAAGAAGACTC CCCTTTGGAC  AATGCCATCA TTACGGTAG  ACGAGGAGC TGCTCCTCG  AAGGGATGA	CCACCATGTT GGTGGTACAA GCTATCTGTC CGATAGACAG TATCGTTCAA ATAGCAACTG CTCGGATTGTC GAGGCTAAGC ATTGCGATAAG ATTGCGATAAG ATTGCGATAAG ATCGTGGATAA TAGCACTTT ATCGTGGAAA TAGCACCTTT	HindIII  GATAAGCTTC CTATTCGAAG  ACTTCATCAA  GATGCCTCTG CTACGGAGAC  CTACGGAGAC  CAGAAGTTC AGGAAAGCCTC AGGAAAGCCTC CTTCCGAA  A AGAAGACGTT CTTCTCCCAA	PStI TGCAGTGAGA ACGTCACTCT AAAGGACAGTA TTCCTGTCAT GCGACAGTGGTCACCTA GTTCACCTA TATCTGTCAC TATCTGTCACC TATCTGGG TATCTGGG TATCTTGGG TATCTTGG TATCTGG TATCTTGG T	CTTTTCAACA GAAAAGGAAG CTTTTCCTTC CTCCAAAGAT AGGGTTTCTA CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTAAC CTACACTACACTAAC CTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACTACACACTACACACTACACACTACACACTACACACACTACACACACACACACACACACACACACACACACACACACAC	AAGGGTAATA TTCCCATTAT  GTGGCACCTA CACCGTGGAT  GGACCCCCAC ACTGGGGTG  GCAGTGAGACT CGTCACTCTGA  AGGACAGTAGA CCTGTCATCT CGACAGTGGTC CTGTCACCAG AGGTGAGTCACCAG AGGTGAGTCACCAG

Fig. 5



BDPC with 2 enhancers based on CsVMV promoter

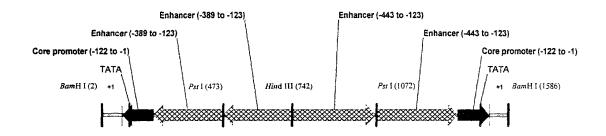
1052 bp

in the plant

Fig. 6

		BamHI							
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	81		TGCCGAACTT ACGGCTTGAA						
						HindIII			
	161	TAGTGGGGGA ATCACCCCCT	TAAGATTCCT ATTCTAAGGA						_
					~~	SacI			
	241	AATCCAATGT TTAGGTTACA	TTACGGGAAA AATGCCCTTT						
	321	CCTATGTTCA GGATACAAGT	AAAATGAAGA TTTTACTTCT						
	401	AAGAAGAACC TTCTTCTTGG	AGGCGAAGAA TCCGCTTCTT						
nd nd						Ps	stI		
the Test Con-	481	ATTGTGAAAG TAACACTTTC	AGACATAGAG TCTGTATCTC						
						SacI			
	561	AAGAATCCAA TTCTTAGGTT	TGTTTACGGG ACAAATGCCC						
	641	CAACCTATGT GTTGGATACA	TCAAAAATGA AGTTTTACT						
	721	AAAAAGAAGA TTTTTCTTCT	ACCAGGCGAA TGGTCCGCTT						
	801	GTGATTGTGA CACTAACACT	AAGAGACATA TTCTCTGTAT	GAGGACACAT CTCCTGTGTA	GTAAGGTGGA CATTCCACCT	AAATGTAAGG TTTACATTCC	GCGGAAAGTA CGCCTTTCAT	ACCTTATCAC TGGAATAGTG	AAAGGAATCT TTTCCTTAGA
Ŷ	881	TATCCCCCAC ATAGGGGGTG	TACTTATCCT ATGAATAGGA	TTTATATTTT AAATATAAAA	TCCGTGTCAT AGGCACAGTA	TTTTGCCCTT AAAACGGGAA	GAGTTTTCCT CTCAAAAGGA	ATATAAGGAA TATATTCCTT	CCAAGTTCGG GGTTCAAGCC
	961	CATTTGTGAA GTAAACACTT							
		BamH	 II						
	1041	GTTTGTGGAT CAAACACCTA	CC Seq. ID No.	5					

Fig. 7



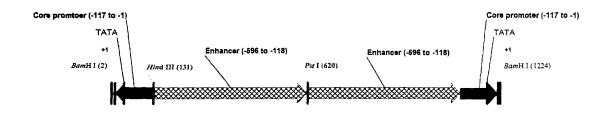
BDPC with 4 enhancers based on CsVMV promoter  $$1590\ \mathrm{bp}$$ 



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81	TTTTCACAAA AAAAGTGTTT	TGCCGAACTT ACGGCTTGAA	GGTTCCTTAT CCAAGGAATA	ATAGGAAAAC TATCCTTTTG	TCAAGGGCAA AGTTCCCGTT	AAATGACACG TTTACTGTGC	GAAAAATATA CTTTTTATAT	AAAGGATAAG TTTCCTATTC
161	TAGTGGGGGA ATCACCCCCT	TAAGATTCCT ATTCTAAGGA	TTGTGATAAG AACACTATTC	GTTACTTTCC CAATGAAAGG	GCCCTTACAT CGGGAATGTA	TTTCCACCTT AAAGGTGGAA	ACATGTGTCC TGTACACAGG	TCTATGTCTC AGATACAGAG
241	TTTCACAATC AAAGTGTTAG	ACCGACCTTA TGGCTGGAAT	TCTTCTTCTT AGAAGAAGAA	TTCATTGTTG AAGTAACAAC	TCGTCAGTGC AGCAGTCACG	TTACGTCTTC AATGCAGAAG	AAGATTCTTT TTCTAAGAAA	TCTTCGCCTG AGAAGCGGAC
321	GTTCTTCTTT CAAGAAGAAA	TTCAATTTCT AAGTTAAAGA	TGCATAAGAA	GAAGCATAAG	ACCGTCATAT	GGATCTTGTA CCTAGAACAT	TCTGTACATT AGACATGTAA	CTTCATTTT GAAGTAAAAA
					SacI		Pst	tI.
401 5	GAACATAGGT CTTGTATCCA	TGCATATGTG ACGTATACAC	CCGCATATTG GGCGTATAAC	ATCTGCTTCT TAGACGAAGA	TGCTGAGCTC ACGACTCGAG	ACATAATACT TGTATTATGA	TCCATAGCTG AGGTATCGAC	CAGCCCTTAC GTCGGGAATG
481	ATTTTCCACC TAAAAGGTGG	TTACATGTGT AATGTACACA	CCTCTATGTC GGAGATACAG	TCTTTCACAA AGAAAGTGTT	TCACCGACCT AGTGGCTGGA	TATCTTCTTC ATAGAAGAAG	TTTTCATTGT AAAAGTAACA	TGTCGTCAGT ACAGCAGTCA
561	GCTTACGTCT CGAATGCAGA	TCAAGATTCT AGTTCTAAGA	TTTCTTCGCC AAAGAAGCGG	TGGTTCTTCT ACCAAGAAGA	TTTTCAATTT AAAAGTTAAA	CTACGTATTC	TTCTTCGTAT AAGAAGCATA	TCTGGCAGTA AGACCGTCAT
1U								SacI
641	TAGGATCTTG ATCCTAGAAC	TATCTGTACA ATAGACATGT	TTCTTCATTT AAGAAGTAAA	TTGAACATAG	GTTGCATATG CAACGTATAC	TGCCGCATAT ACGGCGTATA	TGATCTGCTT ACTAGACGAA	CTTGCTGAGC GAACGACTCG
1 ar	SacI		HindIII					
721	~~ TCACATAATA AGTGTATTAT	CTTCCATAGG GAAGGTATCC	AAGCTTCAGA TTCGAAGTCT	AGGTAATTAT	CCAAGATGTA AGGTTCTACAT	GCATCAAGAA CGTAGTTCTT	TCCAATGTTT AGGTTACAAA	ACGGGAAAAA TGCCCTTTTT
		 Sa	icI					
801	GATACCTTCA	ATTATGTGAG TAATACACTC	C GAGTCGTTCT	A AGCAGATCA! T TCGTCTAGT	A TATGCGGCAC	ATATGCAACG	TATGTTCAAA	AATGAAGAAT TTACTTCTTA
881		AAGATCCTAT	r actgccaga a tgacggtct	r ATGUTTUTT	G AATACGTAGA C TTATGCATC	L IIAACIIII.	. 0110110010	GCGAAGAAAA CGCTTCTTTT
	GAATCTTGAA CTTAGAACTT	י הייהר האיייהרבי	A CTGACGACA	A CAATGAAAA T GTTACTTTT	G AAGAAGATAA C TTCTTCTAT	A GGTCGGTGAT	TGTGAAAGAG A ACACTTTCTG	ACATAGAGGA TGTATCTCCT
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			SacI					
	mmmczmzcci	ጥ ጥሮአጥአአጥልሮ	A CTCGAGTCG	T TUTTUGICI	A GITATACGC	C 0101111100		C AAAAATGAAG G TTTTTACTTC

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Fig. 9



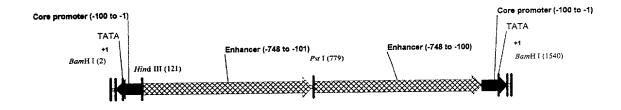
BDPC with 2 enhancers based on ACT2 promoter 1228 bp

17 1 111 1



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						indIII		
81		***************************************		CGAATCATTT GCTTAGTAAA				
161				TTGACGAGTT AACTGCTCAA				
241	. GTGAATAGTG CACTTATCAC		TGTAACATAG	AATAACATAT				
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U 1481 2		TCCAGTGTCA	GTACTTCGGI	TCAAAGCAAA AGTTTCGTTT	TCTTGATTAG	GTTCCCGACT	CTACTAATTA	
#						PstI		
561	ATTAGTTAAC TAATCAATTG			ACAGCCAGGT TGTCGGTCCA		TTACCTGCAG		
— U 641	TCTCAGTCGT			TCGTTTTGAC AGCAAAACTG				
721	TAATCGTGAA			GTATCTTATT CATAGAATAA				
801	TCACGGTCTG AGTGCCAGAC	AATTAATTAT TTAATTAATA	GATACAATTO CTATGTTAAO	TAATAGAAAA ATTATCTTTT	CGAATTAAAT GCTTAATTTA	TACGTTGAAT ATGCAACTTA	TGTATGAAAT ACATACTTTA	CTAATTGAAC GATTAACTTG
881	AAGCCAACCA TTCGGTTGGT	CGACGACGAC GCTGCTGCTG	TAACGTTGC( ATTGCAACG(	TGGATTGACT ACCTAACTGA	CGGTTTAAGT GCCAAATTCA	TAACCACTAA ATTGGTGATT	AAAAACGGAG TTTTTGCCTC	CTGTCATGTA GACAGTACAT
961	ACACGCGGAT TGTGCGCCTA	CGAGCAGGTC GCTCGTCCAG	ACAGTCATGA TGTCAGTACT	A AGCCATCAAA T TCGGTAGTTT	GCAAAAGAAC CGTTTTCTTG	TAATCCAAGG ATTAGGTTCC	GCTGAGATGA CGACTCTACT	TTAATTAGTT AATTAATCAA
1041	TAAAAATTAG ATTTTTAATC	TTAACACGAG AATTGTGCTC	GGAAAAGGCT CCTTTTCCGA	GTCTGACAGC A CAGACTGTCG	CAGGTCACGT GTCCAGTGCA	TATCTTTACC ATAGAAATGG	TGTGGTCGAA ACACCAGCTT	ATGATTCGTG TACTAAGCAC
1121		AATTAATAAA	AAAACTTTCC	CCGAAAATAA GGCTTTATT	TCAACATTCT	CTATTTGGGC	CCTATATAAA GGATATATTT	TTCATATATT AAGTATATAA
			BamHI					<b> </b>
120		GAAACTTTTG	TTCCTAGG					
<del>-</del>								

Fig. 11



BDPC with 2 enhancers based on PR1b promoter of tobacco  $$1544\ \mathrm{bp}$$ 



1 GGATCCTTTT GGGTTTTGGT GAGAAACAAG GAATAGTATG GATGGGTTTT AATAGGGAAT AAGAGTTGAA AAGTCTGCAA CCTAGGAAAA CCCAAAACCA CTCTTTGTTC CTTATCATAC CTACCCAAAA TTATCCCTTA TTCTCAACTT TTCAGACGTT HindIII 81 TTTGTAAAAG AAAAAAATTG GAAAGTCACA TGTTAGCAGA AGCTTCAGAC TCATTAACTT AAAAGAAGAT ATAGACTCAT AAACATTTTC TTTTTTTAAC CTTTCAGTGT ACAATCGTCT TCGAAGTCTG AGTAATTGAA TTTTCTTCTA TATCTGAGTA 161 TAACTTAAAA GAAGATATAG ATTCCAACAC AAGTTCAAAA TTCATAAACG TCAATCTTGG CTAAATTTCT GAACATCAAT ATTGAATTT CTTCTATATC TAAGGTTGTG TTCAAGTTTT AAGTATTTGC AGTTAGAACC GATTTAAAGA CTTGTAGTTA ______ 241 GCATTCCTTT AAAATATAGA TAATAAGTTA GGATGTTGTC ACTTTCTTAA AGCATATTCC GACTGAGTCT GGTAGAATCT CGTAAGGAAA TTTTATATCT ATTATTCAAT CCTACAACAG TGAAAGAATT TCGTATAAGG CTGACTCAGA CCATCTTAGA ______ 321 CATAAACTTT AGGCCTTATC TCTTCAATTA GGCAATTACT TACCTCCGCT CTACTTTAAG AAAATTCAAT GGAGTACACC GTATTTGAAA TCCGGAATAG AGAAGTTAAT CCGTTAATGA ATGGAGGCGA GATGAAATTC TTTTAAGTTA CCTCATGTGG _____ 401 ATTATTAAGT TCATATAAAA ATAAAATTAT ATTAATTCTG TCTCTTGTTG GTTCGCTCTA TCTTTTTCTG TTTTCCTGCT TAATAATTCA AGTATATTT TATTTTAATA TAATTAAGAC AGAGAACAAC CAAGCGAGAT AGAAAAAGAC AAAAGGACGA 🛂 481 TCAACCATAA CATATACAAG AACTACATTT TCCAAGCTAG ATATATCTAA CATGACTGAC TTTGTAAATT TCTTTTGCCA AGTTGGTATT GTATATGTTC TTGATGTAAA AGGTTCGATC TATATAGATT GTACTGACTG AAACATTTAA AGAAAACGGT 561 AGTTAAAGAA AAAAAATGAT GTTATCCAAA TAATAAAGAG AAAGAGCCCT AATGAAAAAA ATGATTTACT ATTAGAGTTG TCAATTTCTT TTTTTTACTA CAATAGGTTT ATTATTTCTC TTTCTCGGGA TTACTTTTT TACTAAATGA TAATCTCAAC 711---TTCAGCTAAT CACATCAATT ATGGTTTTCA TCAAGTATGA CTAATGGCGG CTCTTATCTC ACGTGATGTG ACATTGAAAT AAGTCGATTA GTGTAGTTAA TACCAAAAGT AGTTCATACT GATTACCGCC GAGAATAGAG TGCACTACAC TGTAACTTTA _____ T. 721 TCTTTGACTT TAACACTAAT GTCATATGCT TTCAAATTAA TAATCCGATA AAGCTGCAGA CTCATTAACT TAAAAGAAGA AGAAACTGAA ATTGTGATTA CAGTATACGA AAGTTTAATT ATTAGGCTAT TTCGACGTCT GAGTAATTGA ATTTTCTTCT _____ 801 TATAGACTCA TTAACTTAAA AGAAGATATA GATTCCAACA CAAGTTCAAA ATTCATAAAC GTCAATCTTG GCTAAATTTC ATATCTGAGT AATTGAATTT TCTTCTATAT CTAAGGTTGT GTTCAAGTTT TAAGTATTTG CAGTTAGAAC CGATTTAAAG 881 TGAACATCAA TGCATTCCTT TAAAATATAG ATAATAAGTT AGGATGTTGT CACTTTCTTA AAGCATATTC CGACTGAGTC ACTTGTAGTT ACGTAAGGAA ATTTTATATC TATTATTCAA TCCTACAACA GTGAAAGAAT TTCGTATAAG GCTGACTCAG . 961 TGGTAGAATC TCATAAACTT TAGGCCTTAT CTCTTCAATT AGGCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA ACCATCTTAG AGTATTTGAA ATCCGGAATA GAGAAGTTAA TCCGTTAATG AATGGAGGCG AGATGAAATT CTTTTAAGTT 1041 TGGAGTACAC CATTATTAAG TTCATATAAA AATAAAATTA TATTAATTCT GTCTCTTGTT GGTTCGCTCT ATCTTTTCT ACCTCATGTG GTAATAATTC AAGTATATTT TTATTTTAAT ATAATTAAGA CAGAGAACAA CCAAGCGAGA TAGAAAAAGA 1121 GTTTTCCTGC TTCAACCATA ACATATACAA GAACTACATT TTCCAAGCTA GATATATCTA ACATGACTGA CTTTGTAAAT CAAAAGGACG AAGTTGGTAT TGTATATGTT CTTGATGTAA AAGGTTCGAT CTATATAGAT TGTACTGACT GAAACATTTA 1201 TTCTTTTGCC AAGTTAAAGA AAAAAATGA TGTTATCCAA ATAATAAAGA GAAAGAGCCC TAATGAAAAA AATGATTTAC AAGAAAACGG TTCAATTTCT TTTTTTTACT ACAATAGGTT TATTATTTCT CTTTCTCGGG ATTACTTTTT TTACTAAATG ______ 1281 TATTAGAGTT GTTCAGCTAA TCACATCAAT TATGGTTTTC ATCAAGTATG ACTAATGGCG GCTCTTATCT CACGTGATGT ATAATCTCAA CAAGTCGATT AGTGTAGTTA ATACCAAAAG TAGTTCATAC TGATTACCGC CGAGAATAGA GTGCACTACA

1361 GACATTGAAA TTCTTTGACT TTAACACTAA TGTCATATGC TTTCAAATTA ATAATCCGAT AAAGTCTGCT AACATGTGAC CTGTAACTTT AAGAAACTGA AATTGTGATT ACAGTATACG AAAGTTTAAT TATTAGGCTA TTTCAGACGA TTGTACACTG

1441 TTTCCAATTT TTTTCTTTTA CAAATTGCAG ACTTTTCAAC TCTTATTCCC TATTAAAACC CATCCATACT ATTCCTTGTT AAAGGTTAAA AAAAGAAAAT GTTTAACGTC TGAAAAGTTG AGAATAAGGG ATAATTTTGG GTAGGTATGA TAAGGAACAA

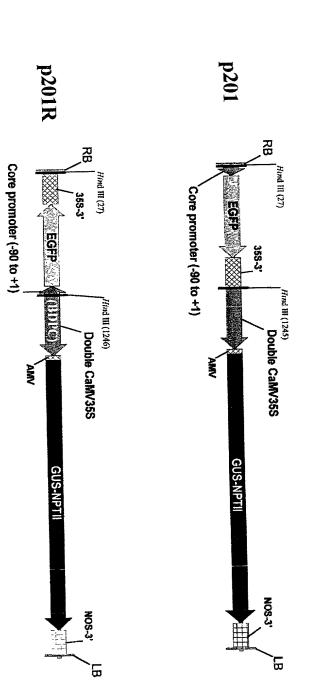
BamHI

1521 TCTCACCAAA ACCCAAAAGG ATCC AGAGTGTTTCAAC TCTTATTCCC TATTAAAACC CATCCATACT ATTCCTTGTT AAAGGTTAAA AAAAGAAAAT GTTTAACGTC TGAAAAGTTG AGAATAAGGG ATAATTTTGG GTAGGTATGA TAAGGAACAA

Seq. ID No. 11

AGAGTGGTTT TGGGTTTTCC TAGG Seq. ID No. 12

Figure 13. Physical Map of T-DNA Region of **Binary Vectors Containing a BDPC** 



(Vitis vinifera ev. Thompson Seedless) after Transformation Figure 14. Transient GFP Expression in Grape SE Using Binary Vectors p201 and p201R

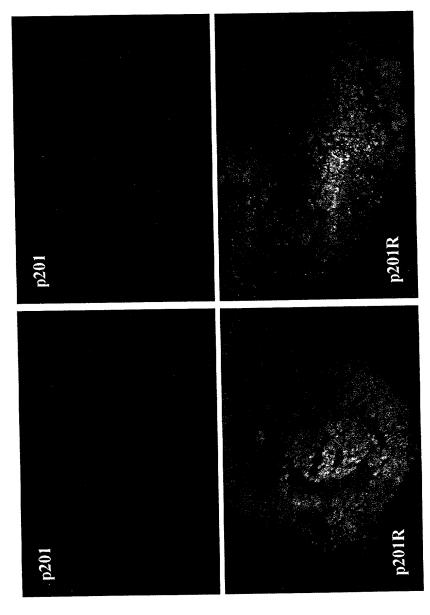
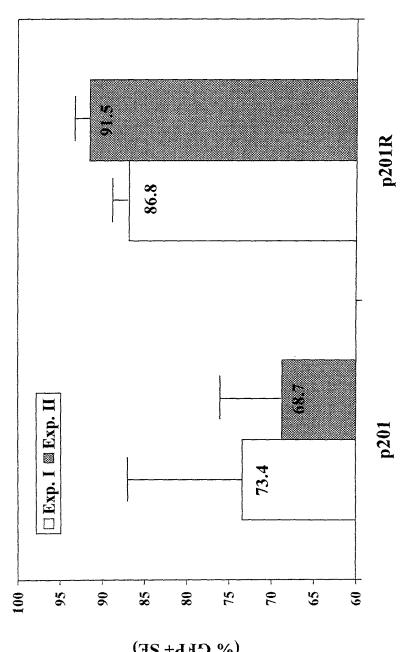


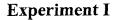
Figure 15. Transient GFP Expression Efficiency of Grape SE (V. vinifera cv. Thompson Seedless) after Transformation Using Binary Vectors p201 And p201R

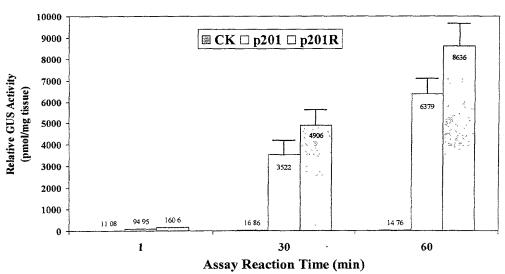


**Binary Vector** 

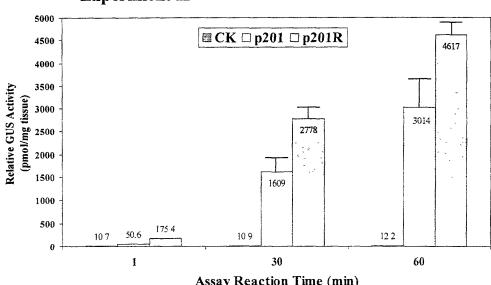
Transient GFP Expression Efficiency (% GFP+ SE)

## Figure 16. Analysis of GUS Activity in Grape SE (V. vinifera cv. Thompson Seedless) after Transformation Using Binary Vectors p201 and p201R





## **Experiment II**



Assay Reaction Time (min)

Figure 17. GFP Expression in SE (A) and Leaf Tissues (B) of Transgenic Grape (V. vinifera ev. Thompson Seedless) Containing the T-DNA of p201R



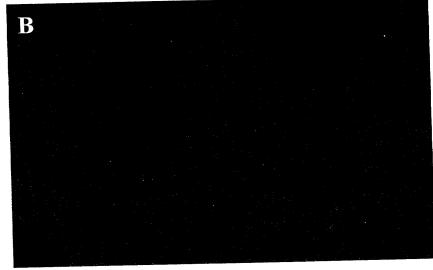
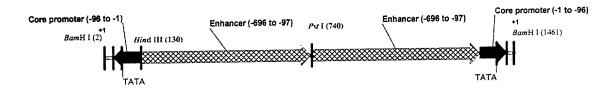


Fig. 18



BDPC with 2 enhancers based on At UBQ1 promoter 1465 bp

BamHI

		BamHI							
	1	GGATCCCTTT CCTAGGGAAA		GAAGAGAGTG	CATCTTTGGG		CCTCCGCCCA	TTATATATGT AATATATACA	
							naIII		
	81				ATGTCCGGAA	TACCACAAAA	CGAATCAACT	TAAAATATTT ATTTTATAAA	
	161				AAATTGAACA	TAGACTACAG	AATTTTAGAA	AACAAACTTT TTGTTTGAAA	
	241	TCTCACCTTT AGAGTGGAAA						GTTTTTTTG CAAAAAAAAC	
W. 1.3 1.4	321							TTATCCGGAT AATAGGCCTA	
The same	401							TCATCAGCAA AGTAGTCGTT	
	481							GATTTGTTAT CTAAACAATA	
	561	TGTATCAGAC ACATAGTCTG	CCTGACCAAG GGACTGGTTC	ATCCAACAAT TAGGTTGTTA	CTCATAGGTT GAGTATCCAA	TTGTGCATAT AACACGTATA	GAAACCTTCG CTTTGGAAGC	ACTAACGAGA TGATTGCTCT	AGTGGTCTTT TCACCAGAAA
War Week Murr	641	TAATGAGAGA ATTACTCTCT	CTATAGATTT	TACAATAGAA	TTTTCGGGTG	TCAAATCTCA AGTTTAGAGT	TCCGTATTCC	TAGAAATGCA ATCTTTACGT	AATTTGGAAA TTAAACCTTT
			PstI						
	721	GTGGGCTGGG CACCCGACCC						CCGGGATATT GGCCCTATAA	
	801	AACATAGACT TTGTATCTGA						TAGAGAGAAA ATCTCTCTTT	
	881	TCCGGTTGAC AGGCCAACTG						TTAGATCGGA AATCTAGCCT	
	961	CGTTTTGTCG GCAAAACAGC	GACCTTCTTC CTGGAAGAAG	CGGTTTATCC GCCAAATAGG	GGATCTAATA CCTAGATTAT	ATATCCATCT TATAGGTAGA	TAGACTTAGC ATCTGAATCG	TAAGTTTGGA ATTCAAACCT	TCTGTTTTT AGACAAAAA
			ACAGTTAGCG	GAGTAGTAGT	CGTTCTTCCA	CTTTAAAAAC	TGTTTATTTA	GAATCTTAGT	TGTAGTGTCT ACATCACAGA
:		TTGGACCTTG AACCTGGAAC	GGAATGATAG CCTTACTATC	AAACGATTTG TTTGCTAAAC	TTATAGCTAC AATATCGATG	TCTATGTATC AGATACATAG	AGACCCTGAC TCTGGGACTG	CAAGATCCAA GTTCTAGGTT	CAATCTCATA
		GGTTTTGTGC	ATATGAAACC TATACTTTGG	TTCGACTAAC AAGCTGATTG	GAGAAGTGGT CTCTTCACCA	CTTTTAATGA GAAAATTACT	GAGAGATATC CTCTCTATAG		TCTTAAAAGC
;		CCACTCAAAT GGTGAGTTTA	CTCAAGGCAT GAGTTCCGTA	AAGGTAGAAA TTCCATCTTT	TGCAAATTTG ACGTTTAAAC	GAAAGTGGGC CTTTCACCCG	TGGGCCTTTT ACCCGGAAAA	CACCATTTCC	CCTGTAACCT GGACATTGGA
					-				

AGCCCAATAT TAGCAAAACC CTAGACGCGT ACATTGACAT ATATAAACCC GCCTCCTCT IGTTTAGGGT TTCTACGTGA
TCGGGTTATA ATCGTTTTGG GATCTGCGCA TGTAACTGTA TATATTTGGG CGGAGGAGGA ACAAATCCCA AAGATGCACT

BamHI

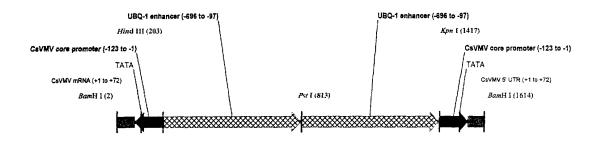
GAGAAGACGA AACACAAAAG GATCC Seq. ID No. 13
CTCTTCTGCT TTGTGTTTTC CTAGG Seq. ID No. 14

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91 9

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Fig. 20



Heterologous BDPC with 2 UBQ-1 enhancers and 2 CsVMV core promoters

1618 bp

11 1/11

H n = 100

1 1 1



## Fig. 21

BamHI

	BamHI							
1	GGATCCACAA CCTAGGTGTT	ACTTACAAAT TGAATGTTTA						
81		TGCCGAACTT ACGGCTTGAA						
					HindIII			_
161	TAGTGGGGGA ATCACCCCCT	TAAGATTCCT ATTCTAAGGA	TTGTGATAAG AACACTATTC	GTTACTTTCC CAATGAAAGG	GAAGCTTAGT CTTCGAATCA	TGATAAAATA ACTATTTTAT	TTTTTATTTG AAAAATAAAC	GTTGTAATTT CAACATTAAA
241	TGTAATATCC ACATTATAGG	CGGGATATTT GCCCTATAAA	CACAAATTGA GTGTTTAACT	ACATAGACTA TGTATCTGAT	CAGAATTTTA GTCTTAAAAT	GAAAACAAAC CTTTTGTTTG	TTTCTCTCTC AAAGAGAGAG	TTATCTCACC AATAGAGTGG
321	TTTATCTTTT AAATAGAAAA	AGAGAGAAAA TCTCTCTTTT						
401	TTTTCCGATT AAAAGGCTAA	TAGATCGGAT ATCTAGCCTA	CTCCTTTTCC GAGGAAAAGG	GTTTTGTCGG CAAAACAGCC	ACCTTCTTCC TGGAAGAAGG	GGTTTATCCG CCAAATAGGC	GATCTAATAA CTAGATTATT	TATCCATCTT ATAGGTAGAA
481	AGACTTAGCT TCTGAATCGA	AAGTTTGGAT TTCAAACCTA	CTGTTTTTTG GACAAAAAAC	GTTAGCTCTT CAATCGAGAA	GTCAATCGCC CAGTTAGCGG	TCATCATCAG AGTAGTAGTC	CAAGAAGGTG GTTCTTCCAC	AAATTTTTGA TTTAAAAACT
561	CAAATAAATC GTTTATTTAG	TTAGAATCAT AATCTTAGTA	GTAGTGTCTT CATCACAGAA	TGGACCTTGG ACCTGGAACC	GAATGATAGA CTTACTATCT	AACGATTTGT TTGCTAAACA	TATAGCTACT ATATCGATGA	CTATGTATCA GATACATAGT
641	GACCCTGACC -CTGGGACTGG	AAGATCCAAC TTCTAGGTTG	AATCTCATAG TTAGAGTATC	GTTTTGTGCA CAAAACACGT	TATGAAACCT ATACTTTGGA	TCGACTAACG AGCTGATTGC	AGAAGTGGTC TCTTCACCAG	TTTTAATGAG AAAATTACTC
721	AGAGATATCT TCTCTATAGA	AAAATGTTAT TTTTACAATA	CTTAAAAGCC GAATTTTCGG	CACTCAAATC GTGAGTTTAG	TCAAGGCATA AGTTCCGTAT	AGGTAGAAAT TCCATCTTTA	GCAAATTTGG CGTTTAAACC	AAAGTGGGCT TTTCACCCGA
	Pst							
.801	GGGCCTTCTG	CAGTTGATAA GTCAACTATT	AATATTTTTA TTATAAAAAT	TTTGGTTGTA AAACCAACAT	ATTTTGTAAT TAAAACATTA	ATCCCGGGAT TAGGGCCCTA	ATTTCACAAA TAAAGTGTTT	TTGAACATAG AACTTGTATC
881	ACTACAGAAT TGATGTCTTA	TTTAGAAAAC AAATCTTTTG	AAACTTTCTC TTTGAAAGAG	TCTCTTATCT AGAGAATAGA	CACCTTTATC GTGGAAATAG	TTTTAGAGAG AAAATCTCTC	AAAAAGTTCG TTTTTCAAGC	ATTTCCGGTT TAAAGGCCAA
961		ATAGAAACAA	AAAAAACAAA	ACATTGTATA	AAGCAAAAGG	CTAAATCTAG	CCTAGAGGAA	TTCCGTTTTG AAGGCAAAAC
1041	TCGGACCTTC		TCCGGATCTA	АТААТАТССА	TCTTAGACTT	AGCTAAGTTT	GGATCTGTTT	TTTGGTTAGC
		GCGGAGTAGT	AGTCGTTCTT	CCACTTTAAA	AACTGTTTAT	TTAGAATCTT	AGTACATCAC	TCTTTGGACC AGAAACCTGG
	TTGGGAATGA AACCCTTACT	TAGAAACGAT ATCTTTGCTA	TTGTTATAGC AACAATATCG	TACTCTATGT ATGAGATACA	ATCAGACCCT TAGTCTGGGA	GACCAAGATC CTGGTTCTAG	CAACAATCTC GTTGTTAGAG	ATAGGTTTTG
1281	TGCATATGAA		AACGAGAAGT	GGTCTTTTAA	TGAGAGAGAT	ATCTAAAATG	TTATCTTAAA	AGCCCACTCA

m million or •1 ∰ H

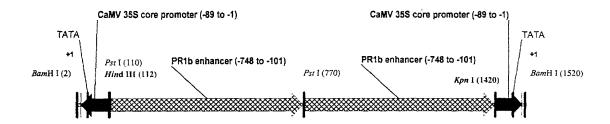
# KpnI

1361			AAATGCAAAT TTTACGTTTA		 	
1441			TATCCTTTTA ATAGGAAAAT			-
1521	GTTCGGCATT CAAGCCGTAA		AGAAAAAATT TCTTTTTAA			_
		BamHI				_
1601	TTGTAAGTTT AACATTCAAA	GIGGAICC	Seq. ID No. 15 Seq. ID No. 16	 	 	 _

in the contract of the contrac

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Fig. 22



Heterologous BDPC with 2 PR1b enhancers and 2 CaMV 35S core promoters

1524 bp



### Fig. 23

### PstI HindIII

- 81 TCATCCCTTA CGTCAGTGGA GATACTGCAG AAGCTTCAGA CTCATTAACT TAAAAGAAGA TATAGACTCA TTAACTTAAA AGTAGGGAAT GCAGTCACCT CTATGACGTC TTCGAAGTCT GAGTAATTGA ATTTTCTTCT ATATCTGAGT AATTGAATTT
- 161 AGAAGATATA GATTCCAACA CAAGTTCAAA ATTCATAAAC GTCAATCTTG GCTAAATTTC TGAACATCAA TGCATTCCTT
  TCTTCTATAT CTAAGGTTGT GTTCAAGTTT TAAGTATTTG CAGTTAGAAC CGATTTAAAG ACTTGTAGTT ACGTAAGGAA
- 241 TAAAATATAG ATAATAAGTT AGGATGTTGT CACTTTCTTA AAGCATATTC CGACTGAGTC TGGTAGAATC TCATAAACTT ATTTTTATATC TATTATTCAA TCCTACAACA GTGAAAGAAT TTCGTATAAG GCTGACTCAG ACCATCTTAG AGTATTTGAA

______

______

- TAGGCCTTAT CTCTTCAATT AGGCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA TGGAGTACAC CATTATTAAG ATCCGGAATA GAGAAGTTAA TCCGTTAATG AATGGAGGCG AGATGAAATT CTTTTAAGTT ACCTCATGTG GTAATAATTC
- 401 TTCATATAAA AATAAAATTA TATTAATTCT GTCTCTTGTT GGTTCGCTCT ATCTTTTTCT GTTTTCCTGC TTCAACCATA AAGTATATTT TTATTTTAAT ATAATTAAGA CAGAGAACAA CCAAGCGAGA TAGAAAAAGA CAAAAGGACG AAGTTGGTAT
- 481 ACATATACAA GAACTACATT TTCCAAGCTA GATATATCTA ACATGACTGA CTTTGTAAAT TTCTTTTGCC AAGTTAAAGA TGTATATGTT CTTGATGTAA AAGGTTCGAT CTATATAGAT TGTACTGACT GAAACATTTA AAGAAAACGG TTCAATTTCT
- AAAAAAATGA TGTTATCCAA ATAATAAAGA GAAAGAGCCC TAATGAAAAA AATGATTTAC TATTAGAGTT GTTCAGCTAA TTTTTTTTACT ACAATAGGTT TATTATTTCT CTTTCTCGGG ATTACTTTTT TTACTAAATG ATAATCTCAA CAAGTCGATT

______

641 TCACATCAAT TATGGTTTTC ATCAAGTATG ACTAATGGCG GCTCTTATCT CACGTGATGT GACATTGAAA TTCTTTGACT AGTGTAGTTA ATACCAAAAG TAGTTCATAC TGATTACCGC CGAGAATAGA GTGCACTACA CTGTAACTTT AAGAAACTGA

#### PStl

- 721 TTAACACTAA TGTCATATGC TTTCAAATTA ATAATCCGAT AAAGCTGCAG ACTCATTAAC TTAAAAGAAG ATATAGACTC
  AATTGTGATT ACAGTATACG AAAGTTTAAT TATTAGGCTA TTTCGACGTC TGAGTAATTG AATTTTCTTC TATATCTGAG
- 801 ATTAACTTAA AAGAAGATAT AGATTCCAAC ACAAGTTCAA AATTCATAAA CGTCAATCTT GGCTAAATTT CTGAACATCA TAATTGAATT TTCTTCTATA TCTAAGGTTG TGTTCAAGTT TTAAGTATTT GCAGTTAGAA CCGATTTAAA GACTTGTAGT
- 881 ATGCATTCCT TTAAAATATA GATAATAAGT TAGGATGTTG TCACTTTCTT AAAGCATATT CCGACTGAGT CTGGTAGAAT TACGTAAGGA AATTTTATAT CTATTATTCA ATCCTACAAC AGTGAAAGAA TTTCGTATAA GGCTGACTCA GACCATCTTA
- 961 CTCATAAACT TTAGGCCTTA TCTCTTCAAT TAGGCAATTA CTTACCTCCG CTCTACTTTA AGAAAATTCA ATGGAGTACA GAGTATTTGA AATCCGGAAT AGAGAAGTTA ATCCGTTAAT GAATGGAGGC GAGATGAAAT TCTTTTAAGT TACCTCATGT
- 1041 CCATTATTAA GTTCATATAA AAATAAAATT ATATTAATTC TGTCTCTTGT TGGTTCGCTC TATCTTTTC TGTTTTCCTG
  GGTAATAATT CAAGTATATT TTTATTTTAA TATAATTAAG ACAGAGAACA ACCAAGCGAG ATAGAAAAAG ACAAAAGGAC
- 1121 CTTCAACCAT AACATATACA AGAACTACAT TTTCCAAGCT AGATATATCT AACATGACTG ACTTTGTAAA TTTCTTTTGC GAAGTTGGTA TTGTATATGT TCTTGATGTA AAAGGTTCGA TCTATATAGA TTGTACTGAC TGAAACATTT AAAGAAAACG
- 1201 CAAGTTAAAG AAAAAAATG ATGTTATCCA AATAATAAAG AGAAAGAGCC CTAATGAAAA AAATGATTTA CTATTAGAGT GTTCAATTTC TTTTTTTTAC TACAATAGGT TTATTATTTC TCTTTCTCGG GATTACTTT TTTACTAAAT GATAATCTCA

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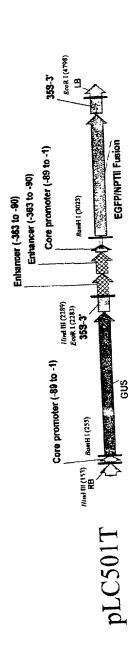
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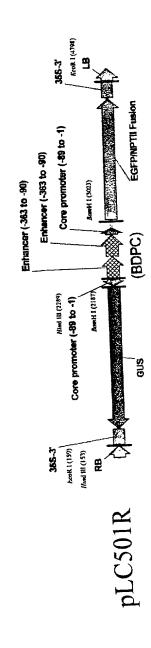
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1 111 111 1 11

Figure 24. Physical Map of T-DNA Region of CaMV 35S Promoter-derived Binary Vectors Containing a BDPC





Thompson Seedless) after Transformation Using Three Binary Vectors Figure 25. Analysis of GUS Activity in Grape SE (V. vinifera cv.

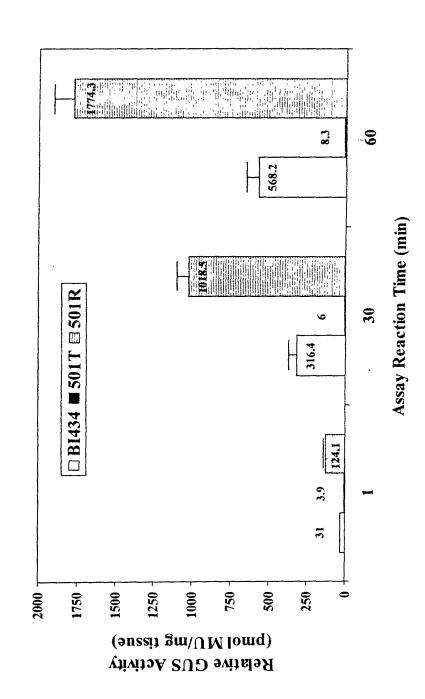


Figure 26. Physical Map of T-DNA Region of Transformation Vectors with 4-Enhancer-Containing BDPC

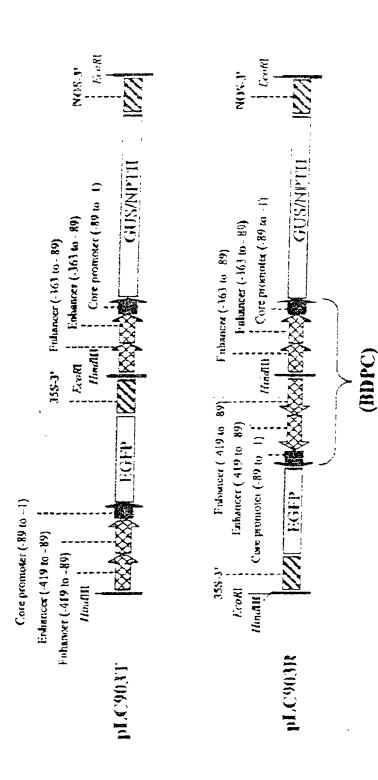


Figure 27. Analysis of GUS Activity in SE (V. vinifera ev. Thompson Seedless) after transformation Using Three Binary Vectors

